The NEMES Gazette

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The Newsletter of the New England Model Engineering Society,
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Our Next Meeting is at 7:00 PM on Thursday September 2, 1999 at the Museum, 154 Moody Street, Waltham Ma.

Annual dues is $20.00 - Please make checks payable to"NEMES" and send to the NEMES Treasurer: Kay R. Fisher 80 Fryeville Road Orange, MA 01364

This Months Contents

From the Editor's Desk:

For over three years Ed Kingsley has worked hard to get his Tips and Techniques column looking the way he wanted it to, and I would mess it up somehow stuffing it into the Gazette. This month we're going to try to get it right. He's done his column as a complete page that will be printed out as a page and inserted into the separately printed out Gazette. Hopefully we'll finally be able to get an issue out with his column the way he wants it.

Maybe see you Thursday -- scl.

President's Corner
by Ron Ginger

Dues and Mailing List

First, let me remind everyone of our process. We collect dues of $20 per year which is mainly used to pay the costs of our newsletter, and for non-commercial speakers, a small speakers fee. To keep the record keeping as simple as possile we have everyone on the same yearly cycle- dues are due in June.

Our treasurer, Kay Fisher collects the dues and records the names on a list. He passes the list to me to enter into a program and print the maiing labels. Kay banks the dues money, and pays our bills.

We got a bit behind in the update cycle for the June renewal, and some new fellows joined, but I didnt get the labels updated before the mailing, so they didnt get a July newsletter. This month we have it all back on schedule, I hope.

Look at the mailiing label on this issue- if the line above your name has the word PAID, thanks, you are all set until June 2000. If you visited a meeting and signed up, but didnt pay dues, it will say NEW. We send new fellows a couple free issues so they can decide if they want to join. If it says NEW you will get this newsletter and one more. If you dont pay the dues, we will drop your name after the next mailing.

If there is no word over your name, you were a paid member in 1998, but havent renewed yet, or you were a visitor and have received a couple free issues. THIS IS YOUR LAST NEWSLETTER UNLESS YOU RENEW. Sorry to be hard, but it isn't fair to the guys that paid to give free newsletters to those that don't.

Of course, its possible we have made an error in our records (I tend to be pretty casual about this). If you think your label is in error please see Kay at the next meeting, or write to him with the update. Any changes Kay has by about the 15th of the month will get sent to me and updated when we print the next batch of labels, about the 20th of the month.

Model and Old Car Show

Remeber the date, Sunday, September 12. We are again going to have a model show as part of the North Shore Old Car Clubs annual show. Last year for our first show we had about 15 exhiitors, and we all had a great time. Id like to see us double that this year. The car club provided us with a nice big tent, so we were not out in the sun (and would have cover if it rained). We had electric power nearby for running an aircompressor, and we even had a real boiler and live steam by Dick Boucher. If you expect to be there see Ed Rogers at the next meeting to get your free entry pass.

Meetings

I have been doing a lot of thinking and talking with members about our meetings. Although in general I think we are running very well, there are some improvements Id like to make.

Most important to me, is to get some more people involved in the planning and running of meetings. I am starting to seriously consider retiring and movnig to Maine in the next year or two, so its time we start to get some others involved so this thing doesnt just fold up when I retire.

Larry Twaits and I drove to Kinzers for the Thrashermens renuion, and talked a lot about the Show and Tell part of the meetings. We came up with a couple new ideas. First, we want to really encourage this part of the meeting.

We often have fellows bring in some very interesting items and do an informal show around the tables. I dont want to discourage this, but I want each one to at least get 5 minutes in front of the whole group so everyone knows whats out there to look at.

We would like to get someone willing to do a little arm-twisitng in the week or so before each meting and to be sure we have at lest 3 people ready to talk at each meeting.

Who would like to volunteer as “show and tell chairman”? Please call me if you ar ewiling to do this.

We also want to set some rules for this- the speaker will be limited to 5 minutes in front of the group- we might even get a gong to keep this part on time! If we have 3 or more speakers at any meeting it will be necessary to keep to the time. Of course, we encourage you to show your project on one of the tables, and you wil likely get to talk and answwer a lot of questions there.

If you have more to cover that you can do in 5 minutes, then we want to make it into a ‘main event’ at one of the meeitngs.

I would also like to get more people involved in the planning of the ‘main event’ at meeitngs. Ideally, Id like 2 or 3 guys to each comit to handling one or 2 metings each year. Any volunteers?

August Meeting.

I’m not sure what it is about the Henrob torch, but regardless of its effectiveness as a torch, it sure generates a lot of heated talk!

After the meeting I saw Jeff DelPapa with an interesting musical instrument, a clavicord. This should have been one of the 5 minute show and tell talks I mentioned above, it was a fine piece of work, and needed to be seen up close to really appreciate.

September Meeting

First, I hope to see at least 3 show and tell items. Remember, this doesn’t have to be a finished ‘work of art’ a bit of work in progress is just fine- Like Geoffery Browns neat gear cutters and relieving tool- Come on Geoff, front and center, dont keep such neat tools in your pocket.

On the subject of cutters, Larry Twaits has built a Quorn tool and cutter grinder, and has done a lot of very good work with it. Larry will be our main event speaker and will talk both about building the Quorn and using it for some interesting tools.

See you Thursday, September 2

--Ron

Calendar of Events

Sept 2, 1999 Thur 7PM
NEMES Monthly club meeting
Waltham, Ma.
Charles River Museum of Industry 617-893-5410

Sept 5, Sun 10-5
Owls Head Antique Motorcycle Festival

Sept 11-12 Sat & Sun
Granite State Steam and Gas
Dublin NH
Phil Barker 603-459-364088

Sept 12 Sun
North Shore Old Car Club
Annual car show w/ NEMES tent
Topsfield fair grounds
Ed Rogers 617-233-3847

Sept 17-19 Fri Sun
Cranberry Flywheelers fall show
So. Carver MA Edaville RR
Dave Robie 781-355-5322

Sept 18th & 19th
Pioneer Valley Live Steam
Steam and diesel trains on a 3000ft track
413-569-0438

Sept 18-19 Sat Sun
NHPOTP Show
Amesbury MA
Bruce Eaton 603-394-7660

Sept 19, Sun 10-5
Owls Head Tribute to Convertibles

Sept 25-26 Sat & San
CAMA Fall Fest
Kent CT Rt 7
Josh Reynolds 860-868-0283

Oct 2-3 Sat & Sun
Steam/Gas Engine Show
W Sutton MA Waters Farm
Butch Oosterman 508-234-5035

Oct 2, Sat
Yankee Steam_up
East Greenwich RI
NEWSM 401-885-0545

Oct 3, Sun 10-5
Owls Head Foreign Auto festival

Oct 7, 1999 Thur 7PM
NEMES Monthly club meeting
Waltham, Ma.
Charles River Museum of Industry 617-893-5410

Oct 9-11 Sat Mon
Cranberry Flywheelers Cranberry Harvest Festival
So. Carver MA Edaville RR
Dave Moore 508-279-1483

Just after labor day
Steam launch at Lees Mill
Lake Winnepesaukee NH

Oct 17, Sun 10-5
Owls Head Ford vs. Chevy Meet

Oct 31
Owls Head Fall Auction & Open House

For a listing, please sent name and brief description of event, time and place and a person to call for further information to.
Bill Brackett at wbracket@ultranet.com or 508-393-6290

The Meeting, August 12, 1999

The August meeting was held August 12th, a week later than normal. Despite the fact that it was the middle of the summer and the wrong week we had a pretty good turnout. After the meeting got going the first person to speak was Walter Stanul, who had a picture of a park gauge (15"?) steam locomotive that he recently discovered was in a neighbor's cellar. The owner would like to see it running again, and hopefully we'll have more info on it in the future.

Ed Rogers reminded us all that the North Shore Old Car Club Show is coming up Sunday September 12 at the Topsfield Fairgrounds. Ed will be bringing 30 passes or so to the next meeting for the people who will be going to the show to exhibit models at the NEMES Table. Those of us who went last year had a good time.

Ron is looking for programs for future meetings. If you have a subject you'd like to hear about, or a speaker that you'd like to hear, let him know. If you want to give a talk yourself, let him know that too.

We didn't think we had a speaker for the August meeting when the last issue got printed, but the Henrob torch seems to be a subject that can generate a lot of heat - and not just the kind you use to heat up metal. Don Strang heard all the claims about the Henrob Torch being a super device with mystical properties and decided that he should see what he could find out about it. Don borrowed some books from a friend with a library with a lot on welding, and called the number in Home Shop Machinist for the Henrob.

Linde came up with the liquid oxygen process in 1897, producing oxygen without having to go through the expensive electrolysis process to split it from water. In 1895 a Frenchman had burned Acetylene with Oxygen. The first OxyAcetylene Torch commercially available came out in 1905. By 1916 OxyAcetylene Welding was state of the art and many companies were doing it. Union Carbide puts out a book on OxyAcetylene welding that is a must have. Another useful book is by Stuart Plumbly and is about Oxygen.

In the early years of the century they did a great many things with torch welding that today we think of as impossible - such as repairing cast iron engine blocks.

For total combustion two molecules of Acetylene combing with 5 of Oxygen to give 4 Carbon Dioxides and 2 Waters. It's not that simple though, because the complete combustion takes place in a couple of steps. First is the Primary or Neutral Flame where 1 C2H2 combines with 1 O2 to give 2 CO and 1 H2. The Secondary Flame involves burning the carbon monoxide and hydrogen to Carbon Dioxide and Water. Since things are HOT, there are some other reactions going on and there are some hot Nitrogen and Oxygen products produced. The result is that the flame from the torch ends up with three definable regions - the neutral flame, the hydrogen flame, and the CO flame. The primary flame reaches about 5850 F, the Hydrogen area about 3800 F, and the CO area about 2300. When welding you need to keep the material in the neutral flame to prevent carbon from depositing in the weld. See the diagram of a nuetral flame on page 6.

In 1982 Ed Dillon invented the torch now known as the Henrob. For a while it was the Dillon torch, but he sold the rights for it to Henrob. Henrob's primary business is producing riveting systems used in heavy trucks. It runs at low pressures (4 psi) for welding although for cutting heavy steel the O2 pressure can be considerably higher.

Don has determined that the Henrob Torch does indeed do something different from the "normal" torch but he's not sure exactly what. You need to know how to use it, and you need to understand the nature of the materials you are welding and the joint you are making for best results. Which is true of any welding job. Dillon was from Adelaide Australia. Don would like to know if he's still alive, and if he ever published anything about his torch.

While Don did some investigating of the Henrob torch to see if he could find out what it was that made it special, Dave Robey has one and is a fan of it. He got it on the NEMES bus trip to the NAMES show in Detroit a couple years ago. He went to the show planning to get a jewelers torch for the small work he does. While he was there he saw Art Drdla giving his demo. Art is an artist with the torch, and as my mother in law would say, he can make it sit up and spit nickels. Dave was impressed, and bought one quick while the rest of us were all on the bus getting ready for that long overnight ride back from Detroit. The factory price for the torch is $359 and Art sells them for $339, or $329 at the shows. You can get one for $300 from the internet, but Dave recommends getting one from Art as that way you get his support for your torch. Dave has sent his back to Art to be tuned up and says that it is definitely worth it.

With most torches you need flux to weld. With the Henrob you set the torch one way, so you have one cone with a dark area - which is critical. You don't use an oxidizing flame with a Henrob and only use extra Acetylene for a reducing flame when you are welding stainless steel. According to Art Drdla the H2 in the flame is in the end of the flame and that's the reason you don't need to use flux. (The H2 acts as a gas shield to prevent the metal from oxyidizing.) You don't need to use a flux to produce the gas shield, although Henrob sells flux for aluminum and cast iron. Sometimes you need to use them and sometimes you don't.

The Henrob torch cuts in only one direction because it has only one preheat nozzle. With the sheet metal attachment it cuts up, with the normal attachment it cuts down. You can easily cut a 1/8 inch kerf in sheet metal, and they claim you can get it down to .014 inches. Typical cutting torches have multiple preheat nozzles arranged in a rosette around the oxygen cutting nozzle. The single nozzle means you have to be more careful about how you make your cut so that you can do the whole thing without losing you're preheat and having to restart it. The Henrob has a button to control the cutting O2. You have to squeeze it like a trigger or you'll shake the torch and put a wiggle into the cut.

The Henrob literature shows a long thin flame. You do get it, but it can be hard to see. You can see the flames shadow.

A typical detailing torch using high pressure gas uses small hoses. The Henrob uses low pressure gas, so it needs to use full size hoses. They are heavier and stiffer than the smaller hoses and can make the torch harder to control. Put the hoses over your shoulder and you don't have to lift their entire weight to move the torch.

For repairing gears and such brazing is used to build up the missing material. With the Henrob it's also possible to build up cast iron to repair things that can't be repaired with brazing. An example is the John Deere manifold that Dave brought in to show us. When he got the manifold, it had a hole the size of a quarter in it. He ground the hole back to good metal and using his Henrob torch and old cast iron piston rings for filler material he filled in the hole and patched up a couple of other cracks. After building up the metal he heats it up from the inside and looks for dark spots in the glow. They signify inclusions or cracks. When he gets the dark spots he grinds them out and then builds that area up again until the entire repair is sound. If you run out of CI piston rings, you can buy good CI rod.

For larger pieces of CI that you are going to weld you will probably have to preheat the piece. Dave uses a charcoal Hibachi for preheat and recommends muffler cutting wheels to prep the area you are going to weld.

Welding cast iron is easy - avoiding the dreaded "PING" after you've finished and the item is cooling down is the hard part. With all welding correct technique and proper materials are needed to get dependable results. For tacking something back together you can get away with using a casual approach, but if you're working on something that's going to be involved with someone's safety it's important to be sure that you use good technique and materials to get a sound dependable weld.

For welding Aluminum OxyHydrogen is often used, with a nasty fluorine based flux.

How about costs? A generic set of torches, regulators and hoses is $169 or so. Then you have to buy fuel. For acetylene you can by a prestolite tank. There is a smaller size prestolite tank but it's too small to be practical. For O2 you can get a 20 cubic foot tank that's about the size of a SCUBA tank. If you don't buy your tanks you'll be spending a lot more to rent the tanks than you do for the gas unless you use a LOT of gas. If you do buy the tanks remember that they need to be tested and stamped every so many years. If your tanks need to be tested it can be expensive, with luck you'll get an exchange tank when you go to pick up gas and testing won't be an issue but it's something to keep in mind. For the Henrob torch you need to buy hoses and regulators to go with it. You end up with about $300 more into your setup than if you go with the $169 package.

Places to visit

Don Strang recently came across some interesting places to visit. Tatnuck Books is at 335 Chandler Street in Worcester. 1-800-642-6657. He hasn't visited Maxwell's Tool House at Lincoln Square in Worcester, but it's said to have a bunch of machine tools on display. There were some quick reviews from the crowd suggesting that the food wasn't that good and was overpriced. It might be worth it to see the tools though. 508-755-1200. O.S. Walker Magnetics on Rockdale St. Worcester has a good plant tour 1-800-962-4638 Down in Pawtucket Rhode Island is Slaters Mill. It's at 401-725-8638 and is free on Saturday. The Heald Village Museum is in Barre Mass. The contact is Jeff Mitchell at 978-355-2862. They have a 1904 vintage machine shop. The last one you can't drive to, it's a site on the internet, www.discflo.com. Discflo makes Disk Pumps - known otherwise as Tesla Turbines

TIPS AND TECHNIQUES

Ed Kingsley

"EASY AS …" – the Addendum

I neglected to mention, in last month's article on stamping part numbers, that using the DRO, while wonderfully convenient, was not necessary. I created a "master", by punching a single letter 18 times in a row, plus two "blanks". Each impression was positioned .100" to the right of the previous impression. This could easily have been easily done with the feed dials alone.

When I changed stamps, I put this "master" back in the jig, and aligned the new stamp to the appropriate left-to-right position on the "master", adjusted the new stamp for rotation and vertical alignment, and proceeded to stamp the new character on each of the workpieces, in that location. This, too, can be done with the feed dial. The "master" ensures that you haven't over, or undershot the correct position. (well, by .100", anyway)

I now have a sinking feeling that the one or two people who may actually have read, AND been able to understand last month's explanation, are now as bewildered as everyone else. I'm sorry. Never mind.

"Never express yourself more clearly than you are able to think." --Niels Bohr

Keeping Your Feelers Out

I was cutting-off a bunch of pieces of 2" aluminum bar on a horizontal band saw, and I had to set the stop very accurately, in order to get the number of pieces required out of the stock I had on hand. I measured, and marked the location of the first cut with a felt marker, positioned the bar with the blade resting on the line, closed the vise, set the stop and cut-off a piece. I measured it, and found that it was .037" longer than I needed. How to reset the stop to cut off precisely .037" less?

I should explain that this saw cuts very repeatably, but there is no scale on the stop rod, nor any other way to measure the movement of the stop itself. I should also mention that I have done this same sort of "adjusting" numerous times before, and always accomplished this task (more or less) with the time honored precision shop method of trial and error. This time, though, I didn't have enough stock to experiment with.

I had recently acquired a lovely set of Starrett Thickness Gages and, in a rare attack of inspiration, I picked them up, and saw -- the solution (… sorry). I put together .037" of leaves, placed them against the stop and brought the bar up against the feelers. I tightened the vise and removed the gages. Then, I loosened the stop and moved it up against the bar.

I sawed off another chunk, measured it and, carrumba, right the first time! Otherwise, I could have used other feelers to 'shim' the necessary correction – either up or down.

Any sense of self-congratulation, at times like this, is usually tempered by this really annoying, "So, why didn't you think of that before?", self-pitying whine. Sigh …. Mom, is that you?

Dipped in 'Stuff'

I dropped by the local *Radio Shack*, the other day, and saw something that looked like a pretty good idea. They were selling a set of Swiss Needle Files, complete with thin red handles (?) A closer look revealed that they appeared to have been coated with that rubber 'dip' stuff they sell in hardware stores, called, "Plasti Dip", (…about $7 for a 14.5oz can). I couldn't be completely sure, though, because the security guy was gloming in on me, but that's how it looked inside of the packaging.

Even small wooden handles seem awkward on these files (to me), but no_handle feels like something is missing. This, then, might be the missing link. I've had a can of 'dip' for awhile -- could be about time to try it out. Report next month. (maybe)

"To invent, you need a good imagination and a pile of junk." --Thomas Edison

Roundabout Thinking

I needed to drill a small diameter rod in the lathe, but I didn't have the right sized collet, and I didn't want to chance marring the finish in a lathe chuck. So, there I stood, sorrowfully 'woe-is..ing' my fate, when I suddenly 'a-ha..ed' myself on the tailstock. On the tailstock chuck, to be more precise.

I rooted around and dug out my pretty accurate, ¼", keyless drill chuck. It's mounted on a ½" straight arbor, so I dropped it into a ½", 5C collet (which I DID have) and snugged it up in the lathe.

I tightened the workpiece in the drill chuck, and put an indicator on it. Initially, it ran out almost .001", but, by rotating the arbor in the collet and putting some 'body German' on it, I was able to get it down to better than .0005" TIR. More than adequate for the project at hand, and, it turned out, repeatable within a few "tenths" when I had to remove and replace the part.

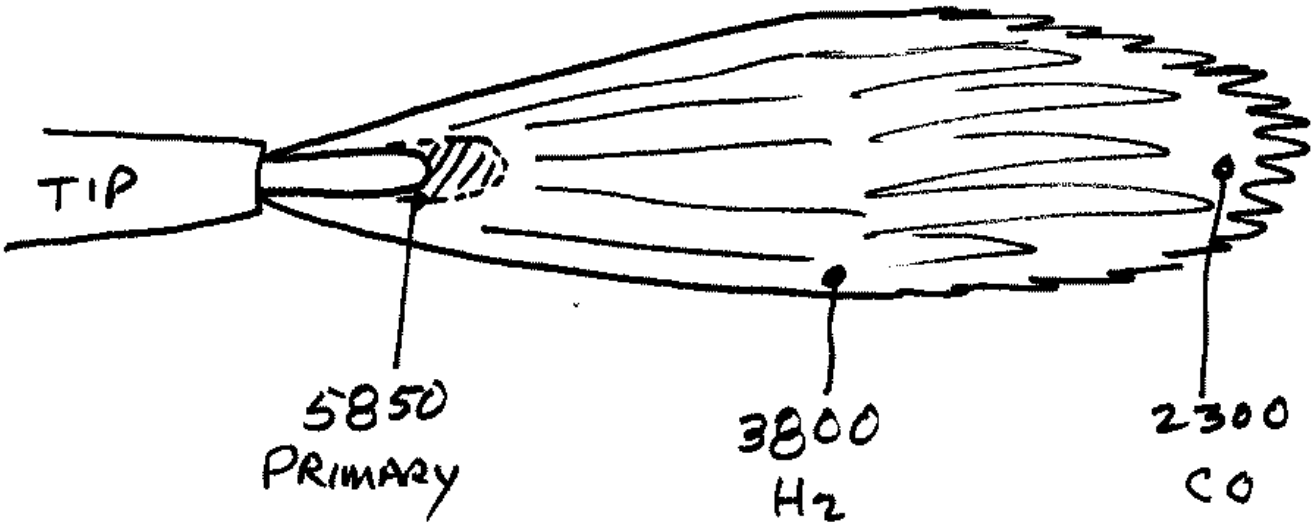
If you don't have collets, you might hold a straight drill chuck arbor in an accurate 3-jaw chuck (Set-Tru?), or dial-it-in in a 4-jaw chuck. Or, you might mount a drill chuck on a MT3 arbor, or whatever size taper arbor fits your lathe spindle.

I've had one of those stout, Jacobs Drill Chucks, with a 1½" x 8 tpi "backplate", which I've used from time to time on the Atlas, but it never occurred to me to use a 'normal' type drill chuck in a similar application.

Now, the reason for that is probably because: regular drill chucks are NOT designed to resist side loading. So, while drilling, reaming and threading (with taps and dies) will probably work OK, -- knurling, ball turning and parting off are definitely NOT recommended !

Lowered expectations is the key to happiness, and often to success. One or the other is usually just fine with me.

"I truly believe that all deadlines are unreasonable, regardless of the amount of time given."
-- The Procrastinator's Creed



Typical Oxy Acetylene Neutral Flame - Sketch courtesy of Don Strang

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